CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER NO. 89-181

SITE CLEANUP REQUIREMENTS AND RESCISSION OF ORDER NO. 88-082 FOR:

MEMOREX CORPORATION
1200 MEMOREX DRIVE FACILITY
CITY OF SANTA CLARA
SANTA CLARA COUNTY

The California Regional Water Quality Control Board, San Francisco Bay Region, (hereinafter called the Board) finds that:

1. Location and Facility Description - Memorex Corporation, hereinafter called the discharger, owns and operates a computer tape manufacturing facility on a 10 acre site in the City of Santa Clara, Santa Clara County. The site is located at 1200 Memorex Drive, approximately 3 miles west of the intersection of Interstate 880 and Highway 101.

2. Site History - Tape manufacturing has been ongoing at this site for over twenty years. As part of the tape manufacturing process the discharger has operated and continues to operate solvent storage, distribution, and recovery systems which include underground tanks used to store the following chemical compounds: methyl ethyl ketone, xylenes, cyclohexanone, isopropanol, and acetone. In addition an underground diesel fuel tank had been maintained on site. Currently, the following chemicals are stored onsite in underground tanks: methyl ethyl ketone (MEK), cyclohexanone, waste water, and a mixture of waste MEK and cyclohexanone.

3. Chemicals Of Concern - Subsurface investigations were initiated at the site in August 1982. These investigations detected organic solvents, including MEK, xylenes, and cyclohexanone, in both soils and groundwater, in the vicinity of the tank farm. This pollution appears to be the result of spillage, inadequate chemical handling practices, overflows, and/or leakage from tanks or piping. Additional investigation has been ongoing.

4. Geohydrology - Investigation by the discharger of groundwater pollution began at this site in 1982 with the installation and subsequent sampling and analysis of seven (7) groundwater monitoring wells. These original seven wells penetrated a fine-grained material to depths of approximately fourteen (14) feet below ground surface and most encountered water-bearing units at depths from eighteen to twenty-two feet below ground surface. This was the uppermost aquifer and was considered to represent the "A" or uppermost aquifer in the Santa Clara

Basin. The groundwater gradient or flow direction could not be determined at this time due to the linear pattern of the wells installed. Additional wells were installed in 1983,1984 and 1985 including one deeper or "B" zone well (M-9) perforated at a depth of seventy-five (75) to eighty-five (85) feet below ground surface and an A aquifer extraction well (M-11). A total of fifteen (15) wells, thirteen A aquifer and one B aquifer monitor wells and one (1) A aquifer extraction well currently exist onsite.

The general groundwater gradient direction in the A aquifer in 1984 was to the north-east. The current gradient has been modified by the operation of extraction well M-9 and the drought to a more east-northeast direction, with an apparent reversal of flow direction in the vicinity of well M-9. The original and current vertical groundwater gradient is downward from the A aquifer to the B aquifer.

In 1982 static water levels were observed in the A aquifer at eleven (11) to fourteen (14) feet below ground surface. Currently the static water levels in the A aquifer onsite vary from twenty (20) to twenty-two (22) feet below ground surface, with at least five A aquifer wells currently dry.

5. Groundwater Pollution - As of April 1989, discharger groundwater monitoring data indicated that the solvent pollution extended vertically to a sand and gravel aquifer at a maximum depth of approximately 30 feet (A aquifer) and horizontally a distance of about 200 feet downgradient from the tank farm area. Groundwater pollution is apparently limited to the shallow aquifer, based on the single B aquifer monitor well.

   Methyl ethyl ketone (MEK) has been detected at concentrations of 2000 parts per billion (ppb), and cyclohexanone has been detected at concentrations of 4070 ppb in groundwater samples from the A aquifer. The highest pollutant concentrations detected in the April 1989 groundwater sampling from the A aquifer include 960 ppb of cyclohexanone and 320 ppb of MEK.

6. Soil Pollution - Additional investigation of soil pollution completed in August 1989 indicates that at least three areas of polluted soil exists in relation to three separate tank areas, including the tank farm area immediately south of the computer tape building, the slop or waste solvent tank area, and the solvent recovery tank complex. Based on preliminary analytic results from the August 1989 soil sampling the highest concentration of pollutants in soil are detected surrounding the tank farm area, which is consequentially the area of greatest concern. The highest levels of soil pollution detected in this area are 1200 ppm of MEK and 1600 ppm of cyclohexanone. The highest levels of soil pollution

detected near the waste solvent storage tank are 840 ppm MEK and 290 ppm cyclohexanone. The highest levels of soil pollution near the solvent recovery tank complex were 0.9 ppm of MEK and 12 ppm cyclohexanone.

7. Interim Remedial Actions - Remedial actions to date include the installation of a groundwater extraction and treatment system, in 1985, to contain and cleanup the groundwater pollution. Additional interim actions were required under Order 88-082 to include the remediation of polluted soil in the tank farm complex. These actions have been delayed by funding, design and permitting for the construction of a new tank farm to replace the system that will have to be removed to allow soil remediation and improve future control and handling practices.

   The groundwater extraction system has effectively reduced the pollutant concentrations and apparently contained the spread of polluted groundwater with the exception of monitor well M-15, which may be the result of recent introduction of dilute cyclohexanone directly into the well bore. Currently the extracted groundwater is treated onsite in a bioremediation plant and through a heat exchanger prior to discharge to the sanitary sewer.

8. The Board adopted a revised Water Quality Control Plan (Basin Plan) for the San Francisco Bay Region on December 17, 1986. The Basin Plan contains water quality objectives and beneficial uses for South San Francisco Bay and contiguous surface and groundwater.

9. The existing and potential beneficial uses of the groundwater underlying and adjacent to the facility include:

   a. Municipal and Domestic Water Supply
   b. Agricultural Water Supply
   c. Industrial Service Water Supply
   d. Industrial Process Water Supply

10. The discharger has caused or permitted, and threatens to cause or permit waste to be discharged or deposited where it is or probably will be discharged to waters of the State and creates or threatens to create a condition of pollution or nuisance.

11. This action is an order to enforce the laws and regulations administered by the Board. This action is categorically exempt from the provisions of the CEQA pursuant to Section 15321 of the Resources Agency Guidelines.

12. The Board has notified the discharger and interested agencies and persons of its intent under California Water Code Section 13304 to prescribe Site Cleanup Requirements for the discharge

and has provided them with the opportunity to submit their written views and recommendations.

13. The Board, in a public meeting, heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED, pursuant to Sections 13304 and 13267 of the California Water Code, that the discharger shall cleanup and abate the effects described in the above findings as follows:

A. PROHIBITIONS

1. The discharge of wastes or hazardous materials in a manner which will degrade water quality or adversely affect the beneficial uses of the waters of the State is prohibited.

2. Further significant migration of pollutants through subsurface transport to waters of the State is prohibited.

3. Activities associated with the subsurface investigation any cleanup which will cause significant adverse migration of pollutants are prohibited.

B. CLEANUP SPECIFICATIONS

1. The storage, handling, treatment or disposal of soil or groundwater containing pollutants shall not create a nuisance as defined in Section 13050(m) of the California Water Code.

2. The dischargers shall conduct site investigation and monitoring activities as needed to define the current local hydrogeologic conditions and to define the lateral and vertical extent of soil and groundwater pollution. Should monitoring results show evidence of pollutant migration, additional characterization and remediation of pollutant extent may be required.

3. The cleanup goal for source-area soils is 1 ppm for total VOCs. Alternate cleanup goals may be proposed based on site specific data. If higher levels of VOCs are proposed in Task C.1.c., the discharger must demonstrate that cleanup to 1 ppm total VOCs is infeasible, that the alternate levels will not threaten the quality of waters of the State, and that human health and the environment are protected. Final cleanup levels for source-area soils shall be approved by the Executive Officer. If any chemicals are left in the soil a program of continued groundwater monitoring will be required.

4. Final cleanup goals for polluted groundwater , onsite and offsite, shall be in accordance with State Water Resources Control Board Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California". Proposed final cleanup levels shall be based on a feasibility study of remedial alternatives that compare cost, effectiveness, time to achieve cleanup goals, and an assessment of risk to determine effects on beneficial uses, human health and the environment. Cleanup levels shall also have the goal of reducing the mobility, toxicity, and volume of pollutants. Final cleanup levels shall be approved by the Board.

C. PROVISIONS

1. The discharger shall comply with the Prohibitions and Specifications above, in accordance with the following time schedule and tasks:

a. TASK: REVISED SOIL REMEDIATION WORKPLAN:

Submit a technical report acceptable to the Executive Officer containing a revised proposal for remediation of polluted soil by removal, or other remedial method. This proposal shall address remedial actions for polluted soil from all three known areas of soil pollution and to include an interim sample and analysis plan (SAP), including a proposed schedule for monitoring of groundwater and soils if necessary prior to the completion of the proposed soil remedial action. The SAP will be finalized as part of Task C.1.d. to address the destruction of monitor wells, if any, during the soil remedial action. If soil removal is a proposed remedial alternative, the proposal must address the disposal of polluted soil, with respect to the RCRA land ban.

COMPLETION DATE: March 1, 1990

b. TASK: PROPOSED FINAL GROUNDWATER AND SOIL CLEANUP OBJECTIVES:

Submit a technical report acceptable to the Executive Officer containing the results of the remedial investigation; an evaluation of the installed interim remedial measures; a feasibility study evaluating alternative final remedial measures necessary to achieve final groundwater cleanup objectives; and the tasks and time schedule necessary to implement the recommended final remedial measures.

COMPLETION DATE: July 2, 1990

c. TASK: COMPLETION OF FINAL REMEDIAL ACTIONS FOR POLLUTED SOIL:

Submit a technical report acceptable to the Executive Officer documenting completion of the necessary tasks identified in the TASK C.1.a. In addition, an evaluation of the replacement of monitor and groundwater extraction wells destroyed during the soil removal with an amended SAP shall be included.

COMPLETION DATE: January 14, 1991

d. TASK: COMPLETE IMPLEMENTATION OF FINAL CLEANUP ACTIONS:

Submit a technical report acceptable to the Executive Officer documenting the implementation of the actions as proposed and accepted by the Executive Officer in accordance with Task b. above.

COMPLETION DATE: Sixty (60) days after implementation of remedial actions proposed in the schedule of Task C.1.b. as accepted by the Executive Officer.

e. TASK: FIVE YEAR STATUS REPORT:

Submit a technical report acceptable to the Executive Officer containing the following:

1. The results of any additional investigative work completed,
2. an evaluation of the effectiveness of installed final cleanup measures,
3. additional measures to achieve final cleanup objectives and goals, if necessary,
4. a comparison of previously estimated costs with actual costs incurred and a revised projection of necessary costs to achieve final cleanup goals and objectives,
5. the tasks and time schedule necessary to implement any additional final cleanup measures,
6. recommended measures for reducing Board oversight activities,
7. describe the reuse of extracted groundwater, if any, and
8. evaluate and document the removal and/or cleanup of polluted soils, and groundwater.

If final groundwater cleanup objectives have not been achieved through the implementation of the approved groundwater and soil remediation plans, this report shall

also contain an evaluation addressing whether it is technically feasible to achieve these objectives by other means. If so, this report shall include a proposal for procedures to do so. If not, this report shall contain proposed alternative cleanup objectives and rationale.

COMPLETION DATE: December 13, 1994

2. The submittal of technical reports evaluating final groundwater remedial measures will include a projection of the cost, effectiveness, benefits, and impact on public health, welfare, and environment of each alternative measure. The remedial investigation and feasibility study shall consider the guidance provided by Subpart F of the National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR Part 300); Section 253 56.1 (c) of the California Health and Safety Code; CERCLA guidance documents with reference to Remedial Investigation, Feasibility Studies, and Removal Actions; and the State Water Resource Control Board's Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California."

3. Technical reports shall be submitted on a quarterly basis summarizing the status of compliance with this Order, and quarterly monitoring data. The report shall include analyses for MEK and cyclohexanone, for all site monitoring wells, or as defined in the site sampling and analysis plan. The reports shall be submitted according to the schedule below, commencing with the report for the fourth quarter 1989, due January 31, 1989.

Quarter	1st quarter	2nd Quarter	3rd Quarter	4th Quarter
Period	Jan-March	April-June	July-Sept	Oct-Dec
Due Date	April 30	July 31	October 31	January 31

The quarterly reports shall include;

a. a summary of work completed since the previous quarterly report,
b. appropriately scaled and labeled maps showing the location of all monitoring wells, extraction wells, and existing structures,
c. updated water table and piezometric surface maps for all affected water bearing zones (second and fourth quarters only), and isoconcentration maps for key pollutants in all affected water bearing zones,
d. a summary tabulation of all well construction data, groundwater levels and chemical analysis results for site monitor wells as specified in the approved SAP,

e. a summary tabulation of volume of extracted groundwater, a summary tabulation of the of chemicals removed (by weight), and results of chemical analysis for all site groundwater extraction wells,
f. the fourth quarter report shall be a summary report for the preceding year,
g. identification of potential problems which will cause or threaten to cause noncompliance with this Order and what actions are being taken or planned to prevent these obstacles from resulting in noncompliance with this Order, and
h. in the event of noncompliance with the Provisions and Specifications of this Order, the report shall include written justification for noncompliance and proposed actions to achieve compliance.

4. If the discharger is delayed, interrupted or prevented from meeting one or more of the completion dates specified in this Order, the discharger shall promptly notify the Executive Officer.

5. All hydrogeologic plans, specifications, reports, and documents shall be signed by or stamped with the seal of a registered geologist, engineering geologist or professional engineer.

6. All samples shall be analyzed by State certified laboratories or laboratories accepted by the Board using approved EPA methods for the type of analysis to be performed. All laboratories shall maintain quality assurance/quality control records for Board review.

7. The discharger shall maintain in good working order, and operate as efficiently as possible, any facility or control system installed to achieve compliance with the requirements of this Order.

8. Copies of all correspondence, reports, and documents pertaining to compliance with the Prohibitions, Specifications, and Provisions of this Order shall be provided to the following agencies:

a. Santa Clara Valley Water District
b. Santa Clara County Health Department
c. City of Santa Clara
d. State Department of Health Services/TSCD

9. The discharger shall permit the Board or its authorized representative, in accordance with Section 13267(c) of the California Water Code:

a. Entry upon the premises in which any pollution source exists, or may potentially exist, or in which any required records are kept, which are relevant to this Order.

b. Access to copy any records required to be kept under the terms and conditions of this Order.

c. Inspection of any monitoring equipment or methodology implemented in response to this Order.

d. Sampling of any groundwater or soil which is accessible, or may become accessible, as part of any investigation or remedial action program undertaken by the discharger.

10. The discharger shall file a report on any changes in site occupancy and ownership associated with the facility described in this Order.

11. If any hazardous substance is discharged in or on any waters of the State, or discharged and deposited where it is, or probably will be discharged in or on waters of the State, the discharger shall report such to this Regional Board, at (415) 464-1225 on weekdays office hours from 8 a.m. to 5 p.m., and to the Office of Emergency Services at (800) 852-7550 during non-business hours. A written report shall be filed with the Regional Board within 5 working days and shall contain information relative to: the nature of waste or pollutant, quantity involved, duration of incident, cause of spill, Spill Prevention, Control, and Countermeasure Plan (SPCC) in effect, if any, estimated size of affected area, nature of effects, corrective measures that have been taken or planned, and a schedule of these activities, and persons/agencies notified.

12. Order No. 88-082 is hereby rescinded.

13. The Board will review this Order periodically and may revise the requirements when necessary.

I, STEVEN R. RITCHIE, Executive Officer, do hereby certify that the foregoing is a full, true and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on December 13, 1989.

STEVEN R. RITCHIE
EXECUTIVE OFFICER